Abstract: 370

Anti-VEGF (Vascular Endothelial Growth Factor)-Resistant Subretinal Fluid Is Associated With Reduced Risk of Macular Atrophy and Better Visual Acuity: Drug-Induced Choroidal New Vessel Homeostasis?

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Purpose:
To investigate the relationship between subretinal fluid (SRF) thickness and vision outcomes, including development of macular atrophy (MA), in eyes with neovascular age-related macular degeneration (nAMD) treated with ranibizumab.

Methods:
HARBOR (NCT00891735) was a phase 3 randomized trial of ranibizumab (0.5 mg and 2 mg as-needed or monthly) among patients with nAMD. In a cohort of eyes with SRF at baseline (n=785; defined as screening, baseline, or week 1), presence and thickness of SRF were determined by 2-dimensional spectral-domain optical coherence tomography (SD-OCT) scans, and eyes were grouped according to SRF thickness: 0 µm, >0−50 µm, >50−100 µm, or >100 µm. Best-corrected visual acuity (BCVA) was assessed using standard Early Treatment Diabetic Retinopathy Study (ETDRS) protocols. Presence of MA was assessed in a cohort of eyes with no MA at baseline (n=784) by review of fluorescein angiograms and color fundus photographs. Retinal fluid volume was estimated with a deep learning algorithm applied to sequential SD-OCT scans. Pooled results are presented for all analyses.

Results:
At month (M) 12, ranibizumab-treated eyes with SRF had greater mean ETDRS BCVA versus eyes with no SRF: 0 µm, 63.6 letters; >0−50 µm SRF, 71.2 letters; >50−100 µm SRF, 71.3 letters; >100 µm SRF, 69.2 letters. These trends were similar at M24. In eyes with no baseline MA regardless of baseline fluid status, rates of MA at M12 and M24 were reduced for eyes with SRF versus no SRF at M3 (5.1% vs 26.3% at M12; 13.2% vs 35.7% at M24). Similarly, presence of SRF at M6 was associated with significantly lower rates of MA at M12 and M24 versus eyes with no SRF in the same cohort.

Conclusions:
In our analysis, presence of SRF was not associated with detrimental vision outcomes over 2 years. Additionally, in eyes with no evidence of MA at baseline, rates of MA after 12 or 24 months were significantly higher when SRF was absent. These findings corroborate earlier analyses. We hypothesize that persistent SRF during anti-VEGF treatment may indicate persistent choroidal new vessel perfusion with transudation, possibly operating as an imperfect compensatory mechanism that maintains degenerative macula function.